EXHIBIT E

PTO/AIA/50 (10-17)
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REISSUE PATENT APPLICATION TRANSMITTAL

Address to:		
Mail Stop Reissue **Commissioner for Patents** **P.O. Box 1450** **Alexandria, VA 22313-1450**	Attorney Docket No.	3564.014REI0
	First Named Inventor	Tai CHEN
	Original Patent Number	RE42,368
	Original Patent Issue Date (Month/Day/Year)	May 17, 2011
	Priority Mail Express® Label No.	

APPLICATION FOR REISSUE OF: (*Check applicable box*) [X] Utility Patent [ ] Design Patent [ ] Plant Patent

APPLICATION ELEMENTS (37 CFR 1.173)	ACCOMPANYING APPLICATION PARTS
1. [ ] **Fee Transmittal Form** (PTO/SB/56)	11. [X] **Statement of status and support for all changes to the claims.** See 37 CFR 1.173(c).
2. [ ] **Applicant asserts small entity status.** See 37 CFR 1.27	12. [X] **Power of Attorney**
3. [ ] **Applicant certifies micro entity status.** See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent.	13. [ ] **Information Disclosure Statement (IDS)** PTOSB/08 or PTO-1449 [ ] Copies of citations attached
4. [X] **Specification and Claims** in double column copy of patent format (*amended, if appropriate*)	14. [ ] **English translation of Reissue Oath/Declaration** (*if applicable*)
5. [X] **Drawing(s)** (*proposed amendments, if appropriate*)	15. [ ] **Return Receipt Postcard** (MPEP § 503) (Should be specifically itemized)
6. [X] **Reissue Oath/Declaration or Substitute Statement** (37 CFR 1.175) (PTO/AIA/05, 06, or 07)	16. [X] **Preliminary Amendment** (37 CFR 1.173; MPEP § 1453)
7. [X] **Application Data Sheet** **NOTE:** Benefit claims under 37 CFR 1.78 and foreign priority claims under 37 CFR 1.55 MUST be set forth in an Application Data Sheet (ADS).	17. [X] **Other:** Authorization Under 37 C.F.R. § 1.136(a)(3);
8. [X] **Original U.S. Patent currently assigned?** [X] Yes [ ] No (*If Yes, check applicable box(es)*) [X] Written Consent of all Assignees (PTO/AIA/53) [X] 37 CFR 3.73(c) Statement (PTO/AIA/96)	
9. [ ] **CD-ROM or CD-R** in duplicate, Computer Program (*Appendix*) or large table [ ] Landscape Table on CD	
10. **Nucleotide and/or Amino Acid Sequence Submission** (*if applicable, items a. – c. are required*) a. [ ] Computer Readable Form (CRF) b. [ ] Specification Sequence Listing on: i. [ ] CD-ROM (2 copies) or CD-R (2 copies); **or** ii. [ ] Paper c. [ ] Statements verifying identity of above copies	[ ] This is a continuation reissue or divisional reissue application (*i.e.*, a second or subsequent reissue application for the same issued patent). (*Check box if applicable.*)

18. CORRESPONDENCE ADDRESS

[X] The address associated with Customer Number: 26111 **OR** [ ] Correspondence address below

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Signature	/Jason D. Eisenberg/	Date	June 29, 2018
Name (Print/Type)	Jason D. Eisenberg	Registration No.	43,447

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Confirmation No.: To Be Assigned
Chen *et al.*	Art Unit: To Be Assigned
Appl. No.: To Be Assigned *(Narrowing Reissue of U.S. Reissue Patent No. 42,368; Reissued May 17, 2011)*	Examiner: To Be Assigned
Filed: Herewith	Atty. Docket: 3564.014REI0
For: **Reconfigurable Optical Add-Drop Multiplexers with Servo Control and Dynamic Spectral Power Management Capabilities**	

Preliminary Amendment in a Reissue Application Under 37 C.F.R. § 1.173(b), Support for all Changes to the Claims, and Status of Co-Pending Proceedings

Commissioner for Patents

PO Box 1450
Alexandria, VA 22313-1450

Sir:

In advance of prosecution, Capella Photonics, Inc. ("Applicant") submits the following amendments and remarks.

It is not believed that extensions of time or fees for net addition of claims are required beyond those that may otherwise be provided for in documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required therefor (including fees for net addition of claims) are hereby authorized to be charged to our Deposit Account No. 19 0036.

Amendment to the Specification

Please add the following paragraph as the first sentence of the specification pursuant to 37 C.F.R. § 1.177:

This is a reissue of U.S. Reissue Patent No. RE42,368 (U.S. App. No. 12/816,084 filed June 15, 2010), which is a reissue of U.S. Patent No. 6,879,750 (U.S. App. No. 10/745,364 filed December 22, 2003).

Amendments to the Claims

The claim identifiers below, or lack thereof, conform to the rules for reissue amendments of previously reissued patents set forth in 37 C.F.R. §§ 1.173(b)(2), (c), (d), and (e). *See* M.P.E.P. §§ 1411 and 1453 (II), (IV), (V), and (VI). The listing of claims will replace all prior versions and listings of the claims.

1. (Reissue Patent Claim, Once Amended) An optical add-drop apparatus comprising fiber collimators serving as an input port, one or more other ports, and an output port, the apparatus comprising:

the fiber collimator [[an]] input port for an input multi-wavelength optical signal having first spectral channels;

the fiber collimator one or more other ports for second spectral channels;

the fiber collimator [[an]] output port for an output multi-wavelength optical signal;

a wavelength-selective device for spatially separating said spectral channels; [and]

a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable *in two dimensions* to reflect its corresponding spectral channel to a selected one of said fiber collimator ports *and to control the power of the spectral channel reflected to said* fiber collimator *selected port.*

2. (Original Patent Claim) The optical add-drop apparatus of claim 1 further comprising a control unit for controlling each of said beam-deflecting elements.

3. (Original Patent Claim) The optical add-drop apparatus of claim 2, wherein the control unit further comprises a servo-control assembly, including a spectral monitor for monitoring power levels of selected ones of said spectral channels, and a processing unit responsive to said power levels for controlling said beam-deflecting elements.

4. (Original Patent Claim) The optical add-drop apparatus of claim 3, wherein said servo-control assembly maintains said power levels at predetermined values.

5. (Once Amended Original Patent Claim) The optical add-drop apparatus of claim 2, wherein the control unit controls said beam-deflecting elements to direct selected ones of said

first spectral channels to one or more of said fiber collimator other ports to be dropped as second spectral channels from said output multi-wavelength optical signal.

6. (Once Amended Original Patent Claim) The optical add-drop apparatus of claim 2, wherein the control unit controls said beam-deflecting elements to direct selected ones of said second spectral channels to said fiber collimator output port to be added to said output multi-wavelength optical signal.

7. (Original Patent Claim) The optical add-drop apparatus of claim 1 further comprising alignment mirrors for adjusting alignment of said input and output multi-wavelength optical signals and said second spectral channels with said wavelength-selective device.

8. (Original Patent Claim) The optical add-drop apparatus of claim 7 further comprising collimators associated with said alignment mirrors, and imaging lenses in a telecentric arrangement with said alignment mirrors and said collimators.

9. (Original Patent Claim) The optical add-drop apparatus of claim 1, wherein said wavelength selective device further combines selected ones of said spectral channels reflected from said beam-deflecting elements to form said output multi-wavelength optical signal.

10. (Once Amended Original Patent Claim) The optical add-drop apparatus of claim 1, wherein said fiber collimator one or more other ports comprise [[an]] a fiber collimator add port and a fiber collimator drop port for respectively adding second and dropping first spectral channels.

11. (Original Patent Claim) The optical add-drop apparatus of claim 1 further comprising a beam-focuser for focusing said separated spectral channels onto said beam deflecting elements.

12. (Original Patent Claim) The optical add-drop apparatus of claim 1, wherein said wavelength-selective device comprises a device selected from the group consisting of ruled diffraction gratings, holographic diffraction gratings, echelle gratings, curved diffraction gratings, and dispersing prisms.

13. (Original Patent Claim) The optical add-drop apparatus of claim 1, wherein said beam-deflecting elements comprise micromachined mirrors.

14. (Original Patent Claim) The optical add-drop apparatus of claim 1, wherein said beam-deflecting elements comprise reflective membranes.

15. (Reissue Patent Claim, Once Amended) An optical add-drop apparatus, comprising:

a fiber collimator serving as an input port for an input multi-wavelength optical signal having multiple spectral channels;

a fiber collimator serving as an output port for an output multi-wavelength optical signal;

one or more fiber collimators serving as one or more drop ports for selected spectral channels dropped from said multi-wavelength optical signal;

a wavelength-selective device for spatially separating said multiple spectral channels; and

a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable *in two dimensions* to reflect its corresponding spectral channel to a selected one of said fiber collimators serving as said ports *and to control the power of the spectral channel reflected to said* fiber collimator serving as said *selected port*, whereby a subset of said spectral channels is directed to said fiber collimator serving as said drop ports.

16. (Reissue Patent Claim, Once Amended) An optical add-drop apparatus, comprising:

a fiber collimator serving as an input port for an input multi-wavelength optical signal having multiple spectral channels;

a fiber collimator serving as an output port for an output multi-wavelength optical signal;

one or more fiber collimators serving as one or more add ports for selected spectral channels to be added to said output multi-wavelength optical signal;

a wavelength-selective device for reflecting said multiple and said selected spectral channels; and

a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable *in two dimensions* to reflect its corresponding spectral channel to a

selected one of said fiber collimator serving as said ports *and to control the power of the spectral channel reflected to said* fiber collimator serving as said *selected port*, whereby said spectral channels from said fiber collimators serving as said add ports are selectively provided to said fiber collimator serving as said output port.

17. (Reissue Patent Claim, Once Amended) A method of performing dynamic add and drop in a WDM optical network, comprising:

separating an input multi-wavelength optical signal into spectral channels;

imaging each of said spectral channels onto a corresponding beam-deflecting element; [[and]]

controlling dynamically and continuously said beam-deflecting elements *in two dimensions* so as to combine selected ones of said spectral channels into an output multi-wavelength optical signal *and to control the power of the spectral channels combined into said output multi-wavelength optical signal*; and

receiving the output multi-wavelength optical signal at a fiber collimator serving as an output port that transmits the output multi-wavelength optical signal to an optical fiber.

18. (Original Patent Claim) The method of claim 17, wherein said selected ones of said spectral channels comprises a subset of said spectral channels, such that other non-selected ones of said spectral channels are dropped from said output multi-wavelength optical signal.

19. (Original Patent Claim, Once Amended) The method of claim 18, wherein said controlling comprises reflecting said non-selected ones of said spectral channels to one or more fiber collimator serving as drop ports.

20. (Original Patent Claim) The method of claim 17 further comprising imaging other spectral channels onto other corresponding beam-deflecting elements, and controlling dynamically and continuously said other beam-deflecting elements so as to combine said other spectral channels with said selected ones of said spectral channels into said output multi-wavelength optical signal.

21. (Original Patent Claim) The method of claim 17, wherein said imaging comprises focusing said spectral channels onto said beam-deflecting elements.

22. (Original Patent Claim) The method of claim 17 further comprising monitoring a power level in one or more of said selected ones of said spectral channels, and controlling an

alignment between said input multi-wavelength optical signal and corresponding beam-deflecting elements in response to said monitoring.

23. (New) The optical add-drop apparatus of claim 1:

wherein none of the multi-wavelength optical signal, the second spectral channels, or the output multi-wavelength optical signal are transmitted through a circulator.

24. (New) The optical add-drop apparatus of claim 1, wherein each of the fiber collimators is a GRIN lens.

25. (New) The optical add-drop apparatus of claim 1, wherein the fiber collimator input port, the one or more other fiber collimator ports, and the fiber collimator output port are arranged in a one dimensional array.

26. (New) The optical add-drop apparatus of claim 1, wherein the fiber collimator input port, the one or more other fiber collimator ports, and the fiber collimator output port are arranged in a two dimensional array.

27. (New) The optical add-drop apparatus of claim 1, wherein each of the beam-deflecting elements is configured to be capable of reflecting its corresponding spectral channel to each and every one of the fiber collimators ports.

28. (New) The optical add-drop apparatus of claim 15, wherein none of the input or output multi-wavelength optical signal or the spectral channels are transmitted through a circulator.

29. (New) The optical add-drop apparatus of claim 16, wherein none of the input or output multi-wavelength optical signal or the spectral channels are transmitted through a circulator.

30. (New) The optical add-drop apparatus of claim 1, wherein the fiber collimator output port is separate from the fiber collimator input port.

31. (New) The optical add-drop apparatus of claim 1, wherein the fiber collimator output port is three or more fiber collimator output ports that are separate from the fiber collimator input port.

32. (New) The optical add-drop apparatus of claim 1, further comprising a power-management system configured to manage power levels of at least one of the first spectral channels and the second spectral channels.

33. (New) The optical add-drop apparatus of claim 32, wherein the power-management system is further configured to control coupling efficiency of one of the first and second spectral channel to at least one port.

34. (New) The optical add-drop apparatus of claim 1, wherein the array of beam-deflecting elements is further positioned to reflect the received spectral channels to the wavelength-selective device without an intermediate mirror.

35. (New) The optical add-drop apparatus of claim 1, wherein the beam-deflecting elements are micromirrors.

Remarks

Status of the Claims and Support for Added Claims Under 37 C.F.R. § 1.173(c)

Upon entry of the foregoing amendment, claims 1-35 are pending in the application, with claims 1 and 15-17 being the independent claims. Claims 1, 5, 6, 10, 15-17, and 19 are sought to be amended. New claims 23-35 are sought to be added. The added claims are believed to introduce no new matter, and their entry is respectfully requested.

Specific support for amended claims 1, 5, 6, 10, 15-17, and 19 and new claims 23-35 is listed below. However, support for each of these new claims can be found throughout the originally-filed application, which issued as U.S. Patent No. 6,879,750 to Chen *et al.*

New/Amended Claims	Exemplary Support[1]
1, 5, 6, 10, 15-17, and 19	3:54-57, 4:26-27, 5:20-22, 6:54-60, 7:6-11, 11:26-30, 12:45-48, 13:1-12
23	3:6-9
24	8:41-43, 9:17-20
25	4:26-28, 9:20-23, 10:29-32, FIGS. 1A, 2A, 2B
26	4:26-28, 9:20-23, 10:29-32, FIG. 3
27	4:7-14, 8:21-27, 9:9-14
28	3:6-9
29	3:6-9
30	13:12-16, 2:46-48
31	8:12-14
32	6:3-9, 11:26-36, 13:1-12
33	4:47-52, 8:27-36; 8:47-49, 11:21-30
34	7:2-11; 8:6-20
35	9:5-8, 10:59-61

[1] Citations are to RE42,368 as published.

Status of Co-Pending Proceedings under 37 C.F.R. § 1.178(b)

This is a reissue application of U.S. Reissue Patent No. RE42,368, which is a reissue of U.S. Patent No. 6,879,750.

RE42,368 is related to U.S. Reissue Patent No. RE42,678. A reissue application (U.S. Appl. No. *to be assigned*) has also been or will be filed for RE42,678.

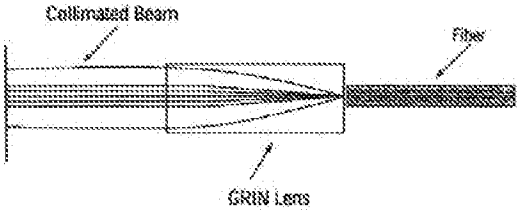
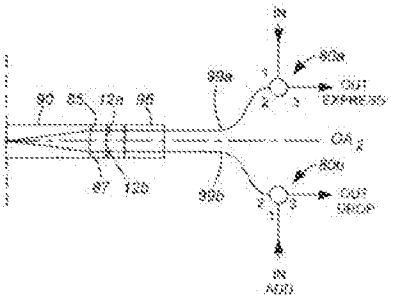
The Patent Trial and Appeal Board ("PTAB") issued Final Written Decisions in the following *inter partes* reviews filed against certain claims of RE42,678 and RE42,368. Applicant appealed all the PTAB's decisions to the Court of Appeals for the Federal Circuit. *See Capella Photonics, Inc. v. Cisco Sys., Inc.* (June 23, 2017) (Nos. 2016-2394, -2395, 2017-1105, -1106, -1107, -1108). All the appeals were consolidated into a single appeal, the Court affirmed the PTAB, and the Court denied Capella's rehearing request. On June 28, 2018, Capella filed a motion with the Supreme Court to extend the July 9, 2018 deadline for filing a petition for a Writ of Certiorari by sixty days.

Inter Parts Review Proceedings	**Status**
IPR2014-01276 (RE42,678)	Appealed or to be appealed to the Supreme Court
IPR2015-00726 (RE42,368)	Appealed or to be appealed to the Supreme Court
IPR2015-00727 (RE42,678)	Appealed or to be appealed to the Supreme Court
IPR2015-00731 (RE42,368)	Appealed or to be appealed to the Supreme Court
IPR2015-00739 (RE42,678)	Appealed or to be appealed to the Supreme Court
IPR2015-00816 (RE42,368)—merged with IPR2014-01166.	Appealed or to be appealed to the Supreme Court
IPR2015-00894 (RE42,678)—merged with IPR2014-01276.	Appealed or to be appealed to the Supreme Court
IPR2015-01958 (RE42,368)—merged with IPR2015-00726.	Appealed or to be appealed to the Supreme Court
IPR2015-01961 (RE42,678)—merged with IPR2015-00727.	Appealed or to be appealed to the Supreme Court
IPR2015-01969 (RE42,368)—merged with IPR2015-00731.	Appealed or to be appealed to the Supreme Court
IPR2015-01971 (RE42,678)—merged with IPR2015-00739.	Appealed or to be appealed to the Supreme Court

Proper Claim Construction of "Port"

In its Final Written Decisions, the PTAB alleged that U.S. Patent No. 6,498,872 to Bouevitch et al. ("Bouevitch") taught "ports" as claimed in RE42,368 because the PTAB alleged RE42,368 did not disavow circulator ports or define "port" to have a specific meaning. *See, e.g.*, IPR2014-01166, Final Written Decision, Paper 44 at 12-14 (PTAB Jan. 28, 2016). Applicant respectfully disagrees despite the Federal Circuit's affirmance and currently intends to continue the appeal.

As shown below, the ports described in RE42,368 are collimator ports, whereas the IN, OUT EXPRESS, OUT/DROP, and IN/ADD in Bouevitch are circulator ports.

RE42,368 Collimator Ports	**Bouevitch Circulator Ports**
	
See Specification, FIG. 1D; *see also id.* at 8:41-43 ("Each output port is provided by a quarter-pitch GRIN lens . . . coupled to an optical fiber (see FIG. 1D).").	*See* Bouevitch, FIG. 11 (showing GRIN lens 90 and circulators 80a and 80b coupled to waveguides 99a and 99b).

As explained below, the claimed ports should not be construed to encompass circulator ports, such as the circulator ports in Bouevitch, for at least three reasons.

1. The Term "Port in View of the Specification

The '368 Patent unambiguously uses collimator ports, not circulator ports.

The '368 Patent generally discusses two classes of ports: input ports and output ports. Input ports include add ports and pass-through ports. *See, e.g.*, Specification, 13:31-33 ("the pass-through port 630 and the add ports 660-1 through 660-M constitute the input ports"). Output ports include drop ports and also pass-through ports. *See, e.g.*, Specification, 5:20-22 ("The output ports of the first WSR-S (or WSR) apparatus include a passthrough port and one or more drop ports."), 12:46-48 ("a plurality of output ports, including a pass-through port 530 and one or more drop ports 540-1 through 540-N (N ≥1)").

The specification of the '368 Patent defines ports in the "Summary of the Invention" to be fiber collimators that serve as both the input ports and the output ports. According to the very first sentence in the Summary of the Invention, "***[t]he present invention*** . . . employ[s] an array of fiber collimators serving as an input port and a plurality of output ports." Specification, 3:54-57 (emphasis added). The appearance of this definition "in the 'Summary of the Invention' section makes it 'more likely' a description of the invention as a whole." *Sevenson Envtl. Servs., Inc. v. United States*, 76 Fed. Cl. 51, 69 (Fed. Cl. 2007) (citing *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 864 (Fed. Cir. 2004)). The fact that the very first sentence of the Summary of the Invention expressly provides that fiber collimators are the physical structure of ports is compelling evidence that the claimed ports must be fiber collimators. *See C.R. Bard*, 388 F.3d at 864 (finding that when the Summary of the Invention states that "[t]he implant includes a pleated surface," the "patent requires the 'implant' . . . to have a pleated surface." (citation omitted)).

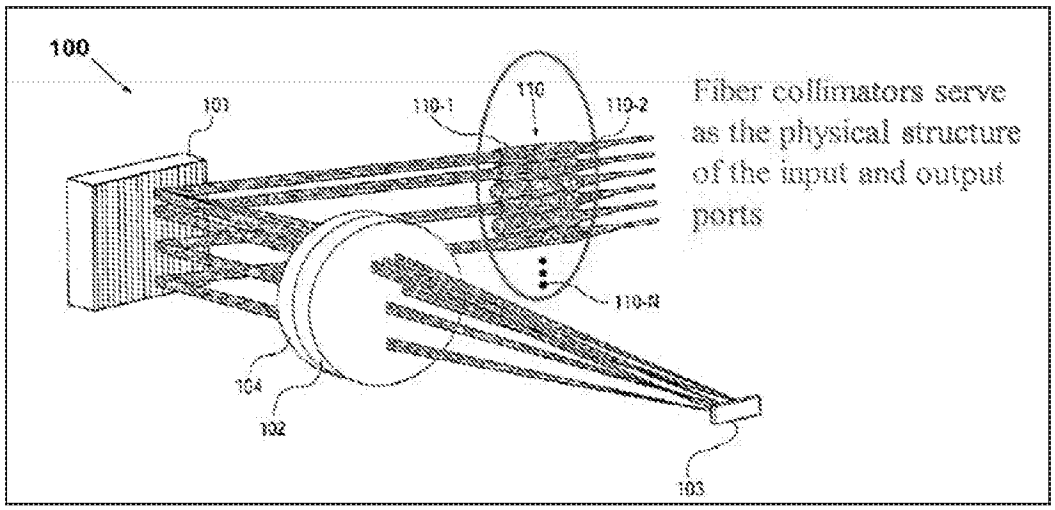
Additionally, because the physical structure provided for "port" in the Summary of the Invention is consistent with the characterization of port in the specification as a whole, "it is apparent that the patentee was not merely providing examples of the invention, but rather that the patentee intended for" the term port to have a fiber collimator physical structure. *See Sevenson Envtl. Servs.*, 76 Fed. Cl. at 69. "[The Federal Circuit] has indicated that a statement in a specification that describes the invention as a whole can support a limiting construction of a claim term. That is especially true where, as here, other statements and illustrations in the patent are consistent with the limiting description." *Am. Piledriving*

Equip., Inc. v. Geoquip, Inc., 637 F.3d 1324, 1334 (Fed. Cir. 2011) (citing *C.R. Bard*, 388 F.3d at 864).

The specification as a whole leaves no ambiguity: fiber collimators serve as the physical structure of the claimed ports. The specification repeatedly makes this relationship clear. *See, e.g.*, Specification, 4:26-27 ("The fiber collimators serving as the input and output ports"), 8:35-36 ("the fiber collimator serving as the output port"), 9:20-21 ("The fiber collimators serving as the input and output ports"), 9:62-63 ("the fiber collimators (serving as the input and output ports)"), 10:29-32 (In FIG. 3, "the one-dimensional fiber collimator array 110 of FIG. 2B is replaced by a two-dimensional array 350 of fiber collimators, providing for an input-port and a plurality of output ports."), 10:52-53 ("the fiber collimators that provide for the input and output ports"), 2:44 ("port/fiber"), 8:33-34 (output ports have a "fiber core"). Thus, "[t]he specification's use of the word ['port'] leaves no doubt about its meaning." *See PPC Broadband, Inc. v. Corning Optical Commc'ns RF, LLC*, 815 F.3d 747, 753 (Fed. Cir. 2016).

Similarly, this characterization of "port" as a "fiber collimator" is reinforced by the description of the patent's figures. The specification explains that Figure 1A, which is also printed on the face of the '368 Patent, depicts an apparatus that includes "an array of fiber collimators 110, providing an input port 110-1 and a plurality of output ports 110-2 through 110-N (N≥3)." ('368 Patent, 6:58-60.) In discussing 110-1 through 110-N, the specification uses the term "port" and its "fiber collimator" structure interchangeably. *See, e.g.*, Specification, 6:65 ("input port 110-1"), 7:9-10 ("output ports 110-2 through 110-N"), 8:19-20 ("output ports 110-2 through 110-N"), 10:14 ("fiber collimators 110-1 through 110-N"), 10:21 ("fiber collimators 110-1 through 110-N").[2] Thus, both the description of the figure and the description of the figure's components (110, 110-1 through 110-N) delineate the physical structure of "port" as a fiber collimator. An annotated version of Figure 1A is reproduced below.

[2] Figures 2A and 2B also use the 110 and 110-1 through 110-N nomenclature.



2. Negative Limitations

The claimed ports exclude circulator ports because the new claims in this application narrowly define the term "port." Several new claims recite a negative limitation. For example, claim 44 recites "wherein the input port, the output port, and the other ports are not coupled to a circulator." And claim 31 recites "wherein the first spectral channels and the second spectral channels are not transmitted through an optical circulator." These claim elements must be given patentable weight because all words in a claim must be considered—including negative limitations. *See In re Wilson*, 424 F.2d 1382, 1385 (C.C.P.A. 1970) ("All words in a claim must be considered in judging the patentability of that claim against the prior art."); *Ex parte Waghray*, Appeal No. 2011-007825, Appl. No. 11/433,547 (B.P.A.I., Sept. 18, 2012); *Ex parte Gilbert*, Appeal No. 2000-001741, Appl. No. 08/654,401 ("Albeit a negative limitation, this is still a claim limitation which must be considered by the examiner when evaluating the prior art which is applied against the claims.") (B.P.A.I., Jul. 31, 2002); *Ex Parte Deen*, Appeal No. 2008-001005, Appl. No. 11/175,231, p. 7 (B.P.A.I., Nov. 26, 2008) ("that when a reference fails to teach a negative limitation, such limitation cannot be assumed to be inherent to that reference simply by virtue of its negative nature."). Several new claims recite a negative limitation excluding circulators, so these claims exclude circulator ports.

3. Manifest Statement of Disavowal

The claimed ports exclude circulator ports because the patent owner unequivocally makes the following manifest statement of disavowal: The meaning of input port, output port, add port, drop port, and other ports in this reissue application does **not** encompass a "circulator port."[3] In the instance of disavowal, the prosecution history can compel departure from the plain meaning of a claim term. *Pacing Techs., LLC v. Garmin Int'l, Inc.*, 778 F.3d 1021, 1024 (Fed. Cir. 2015) (citation omitted). With this manifest statement of disavowal, Applicant has distinguished the ports in both the existing claims and the new claims—added herein or in future amendments—from circulator ports.

* * *

For at least these three reasons, the claimed "ports" have been differentiated from circulator ports, such as the circulator ports disclosed in Bouevitch.

U.S. Patent No. 6,798,941 to Smith et al. is Not Prior Art

In its Final Written Decision, the PTAB alleged that U.S. Patent No. 6,798,941 to Smith et al. ("Smith") was prior art. *See* IPR2014-01166, Final Written Decision, Paper 44 at 17-21 (PTAB Jan. 28, 2016). Applicant respectfully disagrees even though the Federal Circuit affirmed he PTAB.

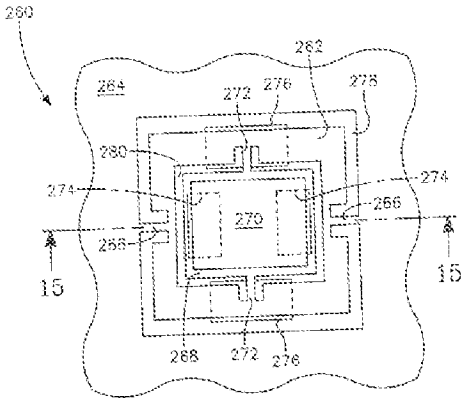
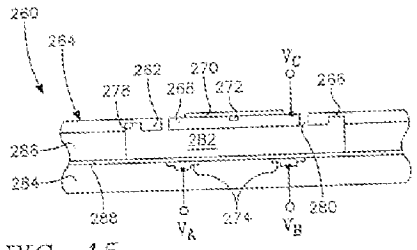
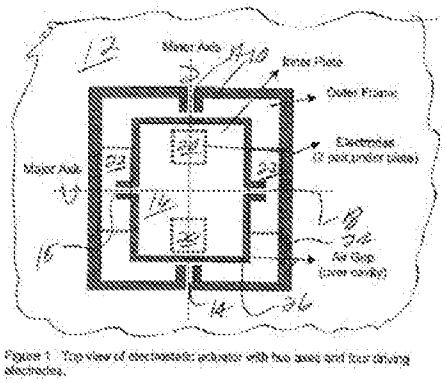
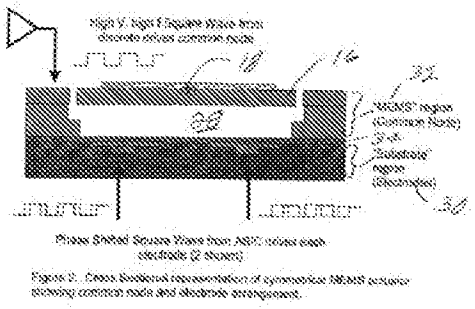
For Smith to be prior art, the effective filing date from one of the two following provisional applications must be relied upon: (1) U.S. Provisional Application No. 60/267,285 ("'285 Provisional") and (2) U.S. Provisional Application No. 60/234,683 ("'683 Provisional"). *Compare* Smith (filed September 20, 2001), *with* RE42,368 (priority back to

[3] A circulator could be coupled to (either upstream or downstream from) a claimed port. *See* U.S. Application No. 60/277,217, Specification at p. 3 ("Circulators are situated on all of the physical input/output ports, allowing for two-way optical propagation."), Drawings at FIG. 9; *see also* IPR2014-01166, Final Written Decision, Paper 44 at 14 (PTAB Jan. 28, 2016) (citing to disclosure in U.S. Application No. 60/277,217 for written support). But the claimed ports are unequivocally not circulator ports.

March 19, 2001). As will be explained, neither of these provisional applications can be relied upon for an earlier effective filing date.

Smith is not entitled to benefit from the filing date of the '285 Provisional because Smith and the '285 Provisional do not share common inventorship. A non-provisional patent application can only claim priority to a provisional application with common inventorship. *See* 35 U.S.C. §§ 119, 120; *see also* M.P.E.P. § 211. Here, the inventive entities are entirely different. *Compare* Smith (inventors David A. Smith, John E. Golub, and Fariborz Farhan), *with* '285 Provisional (inventors Steven L. Garverick and Michael L. Nagy). Smith is therefore not entitled to benefit from the filing date of the '285 Provisional.

Smith is also not entitled to benefit from the filing date of the '683 Provisional. Smith is not entitled to benefit from this filing date because the movable mirror disclosed in the '683 Provisional was not carried forward into the Smith patent. The law has held for at least thirty-four years that a patent is prior art as of its earliest effective filing date only for subject matter carried forward from the earliest application. *See In re Lund*, 376 F.2d 982, 988 (C.C.P.A. 1967) ("the continuation-in-part application is entitled to the filing date of the parent application as to all subject matter carried forward into it from the parent application, whether for purposes of obtaining a patent or subsequently utilizing the patent disclosure as evidence to defeat another's right to a patent."). The Federal Circuit has extended this principle to patents claiming priority to provisional applications. *See In re Giacomini*, 612 F.3d 1380, 1383-84 (Fed. Cir. 2010); *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1381 (Fed. Cir. 2015) (citing *In re Wertheim*, 646 F.2d 527, 537 (C.C.P.A. 1981)). Here, Smith's mirror structure is not entitled to the priority date of the '683 Provisional because the mirror disclosed in Smith was not carried forward from the '683 Provisional. Rather, the mirror structure was carried forward from the '285 Provisional, which Smith cannot claim benefit. As shown below, Smith's mirror is from the '285 Provisional—not the '683 Provisional.

Smith, FIGS. 14 and 15	'285 Provisional, FIGS. 1 and 2
 FIG. 14  FIG. 15	 

Smith, 14:57-65	'285 Provisional
The cell includes a gimbal structure of an outer frame 262 twistably supported in a support structure 264 of the MEMS array through a first pair of torsion beams 266 extending along and twisting about a minor axis. The cell further includes a mirror plate 268 having a reflective surface 270 twistably supported on the outer frame 262 through a second pair of torsion beams 272 arranged along a major axis perpendicular to the minor axis and twisting thereabout.	It includes a gimbal structure of an outer frame 10 twistably supported in the support structure 12 of the MEMS array through a first pair of torsion bars 14 extending along and twisting about a minor axis and a mirror plate 16 having a reflective surface twistably supported by the outer frame 10 through a second pair of torsion bars 18 arranged along a major axis perpendicular to the minor axis and twisting thereabout.

The '683 Provisional vaguely discloses a mirror, but this disclosure was left behind; it was not carried forward into the Smith patent. The '683 Provisional discloses "a mirror array with elements that can be rotated in an analog fashion about two orthogonal axes." '683 Provisional, p. 6. This disclosure, however, is entirely different than the disclosure that ended up in the Smith patent. The mirrors are different because the '683 Provisional has mirrors that can be rotated in an analog fashion whereas Smith's mirror moves in a step-wise digital fashion. *See* IPR2014-01166, Final Written Decision, Paper 44 at 25 (PTAB Jan. 28, 2016) ("Petitioner does not dispute that Smith relies on digital control."). The Smith patent never talks about a mirror rotated in an analog fashion. Rather, this disclosure was left behind. Since Smith cannot rely on the provisional application where Smith's mirror originated (i.e., the '285 Provisional), Smith is not entitled to an earlier effective filing date, at least with respect to a two-axis mirror.

* * *

Smith is not entitled to the filing date of the '285 Provisional because Smith and the '285 Provisional do not share common inventorship. And Smith is not entitled to the filing date of the '683 Provisional because Smith's mirror structure was not carried forward from the '683 Provisional. Since Smith is not entitled to an earlier effective filing date, the Office should not rely on Smith as a prior art reference.

Conclusion

Prompt and favorable consideration of this Preliminary Amendment is respectfully requested. Applicant believes the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

/Jason D. Eisenberg/

Robert Greene Sterne, Reg. No. 28,912
Jason D. Eisenberg, Reg. No. 43,447
Tyler J. Dutton, Reg. No. 75,069
Attorneys for Patent Owner

Date: June 29, 2018

1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
(202) 371-2600

2764329.doc

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors: CHEN *et al.*	Confirmation No.: 4945
Applicant: Capella Photonics, Inc.	Art Unit: 3992
Reissue Application No.: 16/023,127	Examiner: HUGHES, DEANDRA M.
Filing Date: June 29, 2018	Atty. Docket: 3564.014REI0

Title: **RECONFIGURABLE OPTICAL ADD-DROP MULTIPLEXERS WITH SERVO CONTROL AND DYNAMIC SPECTRAL POWER MANAGEMENT CAPABILITIES**

Amendment and Response in a Reissue Application Under 37 C.F.R. § 1.173(b) and Statement of Status and Support for Changes to the Claims Under 37 C.F.R. § 1.173(c)

Mail Stop Amendment

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Commissioner:

In reply to the Office Action dated June 26, 2019, Applicant submits the following Amendment and Remarks.

It is not believed that extensions of time are required beyond those that may otherwise be provided for in documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and any additional fees required to continue prosecution or appeal of this application (including issue fee, fees for net addition of claims or forwarding to appeal) are hereby authorized to be charged to our Deposit Account No. 19-0036.

Amendments to the Claims

Please amend pending **claims 23, 28, 37-39, 47, 48, 52, and 53**. Please cancel pending **claim 56**. Please amend canceled **claims 7, 8, and 14** as indicated below. **Claims 1-22** remain canceled. Applicant has also provided an informally annotated set of claims showing changes between the Second Preliminary Amendment and this Amendment in an Appendix to this Amendment and Response. A complete listing of all claims and their status in the application is as follows:

~~1. An optical add-drop apparatus comprising~~

~~an input port for an input multi-wavelength optical signal having first spectral channels;~~

~~one or more other ports for second spectral channels;~~

~~an output port for an output multi-wavelength optical signal;~~

~~a wavelength-selective device for spatially separating said spectral channels; and~~

~~a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable *in two dimensions* to reflect its corresponding spectral channel to a selected one of said ports *and to control the power of the spectral channel reflected to said selected port*.~~

~~2. The optical add-drop apparatus of claim 1 further comprising a control unit for controlling each of said beam-deflecting elements.~~

~~3. The optical add-drop apparatus of claim 2, wherein the control unit further comprises a servo-control assembly, including a spectral monitor for monitoring power levels of selected ones of said spectral channels, and a processing unit responsive to said power levels for controlling said beam-deflecting elements.~~

~~4. The optical add-drop apparatus of claim 3, wherein said servo-control assembly maintains said power levels at predetermined values.~~

~~5. The optical add-drop apparatus of claim 2, wherein the control unit controls said beam-deflecting elements to direct selected ones of said first spectral channels to one or more of said other ports to be dropped as second spectral channels from said output multi-wavelength optical signal.~~

~~6. The optical add-drop apparatus of claim 2, wherein the control unit controls said beam-deflecting elements to direct selected ones of said second spectral channels to said output port to be added to said output multi-wavelength optical signal.~~

7. (Canceled)

8. (Canceled)

~~9. The optical add-drop apparatus of claim 1, wherein said wavelength selective device further combines selected ones of said spectral channels reflected from said beam-deflecting elements to form said output multi-wavelength optical signal.~~

~~10. The optical add-drop apparatus of claim 1, wherein said one or more other ports comprise an add port and a drop port for respectively adding second and dropping first spectral channels.~~

~~11. The optical add-drop apparatus of claim 1 further comprising a beam-focuser for focusing said separated spectral channels onto said beam deflecting elements.~~

~~12. The optical add-drop apparatus of claim 1, wherein said wavelength-selective device comprises a device selected from the group consisting of ruled diffraction gratings, holographic diffraction gratings, echelle gratings, curved diffraction gratings, and dispersing prisms.~~

~~13. The optical add-drop apparatus of claim 1, wherein said beam-deflecting elements comprise micromachined mirrors.~~

14. (Canceled)

~~15. An optical add-drop apparatus, comprising~~

~~an input port for an input multi-wavelength optical signal having multiple spectral channels;~~

~~an output port for an output multi-wavelength optical signal;~~

~~one or more drop ports for selected spectral channels dropped from said multi-wavelength optical signal;~~

~~a wavelength-selective device for spatially separating said multiple spectral channels; and~~

~~a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable *in two dimensions* to reflect its corresponding spectral channel to a selected one of said ports *and to control the power of the spectral channel reflected to said selected port*, whereby a subset of said spectral channels is directed to said drop ports.~~

~~16. An optical add-drop apparatus, comprising:~~

~~an input port for an input multi-wavelength optical signal having multiple spectral channels;~~

~~an output port for an output multi-wavelength optical signal;~~

~~one or more add ports for selected spectral channels to be added to said output multi-wavelength optical signal;~~

~~a wavelength-selective device for reflecting said multiple and said selected spectral channels; and~~

~~a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable *in two dimensions* to reflect its corresponding spectral channel to a selected one of said ports *and to control the power of the spectral channel reflected to said selected port*, whereby said spectral channels from said add ports are selectively provided to said output port.~~

~~17. A method of performing dynamic add and drop in a WDM optical network, comprising:~~

~~separating an input multi-wavelength optical signal into spectral channels;~~

~~imaging each of said spectral channels onto a corresponding beam-deflecting element; and~~

~~controlling dynamically and continuously said beam-deflecting elements *in two dimensions* so as to combine selected ones of said spectral channels into an output multi-wavelength optical signal *and to control the power of the spectral channels combined into said output multi-wavelength optical signal*.~~

~~18. The method of claim 17, wherein said selected ones of said spectral channels comprises a subset of said spectral channels, such that other non-selected ones of said spectral channels are dropped from said output multi-wavelength optical signal.~~

~~19. The method of claim 18, wherein said controlling comprises reflecting said non-selected ones of said spectral channels to one or more drop ports.~~

~~20. The method of claim 17 further comprising imaging other spectral channels onto other corresponding beam-deflecting elements, and controlling dynamically and continuously said other beam-deflecting elements so as to combine said other spectral channels with said selected ones of said spectral channels into said output multi-wavelength optical signal.~~

~~21. The method of claim 17, wherein said imaging comprises focusing said spectral channels onto said beam-deflecting elements.~~

~~22. The method of claim 17 further comprising monitoring a power level in one or more of said selected ones of said spectral channels, and controlling an alignment between said input multi-wavelength optical signal and corresponding beam-deflecting elements in response to said monitoring.~~

23. (New) An optical add-drop apparatus comprising an output port and fiber collimators serving as an input port and one or more other ports, the apparatus comprising:

the fiber collimator input port for an input multi-wavelength optical signal having first spectral channels;

the fiber collimator one or more other ports for second spectral channels;

the output port for an output multi-wavelength optical signal;

a wavelength-selective device for spatially separating said spectral channels;

a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable in two dimensions to reflect its corresponding spectral channel to a selected one of said output port or the fiber collimator ports and to control the power of the spectral channel reflected to said output port or the fiber collimator selected port.

24. (New) The optical add-drop apparatus of claim 23 further comprising a control unit for controlling each of said beam-deflecting elements.

25. (New) The optical add-drop apparatus of claim 24, wherein the control unit further comprises a servo-control assembly, including a spectral monitor for monitoring power levels of selected ones of said spectral channels, and a processing unit responsive to said power levels for controlling said beam-deflecting elements.

26. (New) The optical add-drop apparatus of claim 25, wherein said servo-control assembly maintains said power levels at predetermined values.

27. (New) The optical add-drop apparatus of claim 24, wherein the control unit controls said beam-deflecting elements to direct selected ones of said first spectral channels to one or more of said fiber collimator other ports to be dropped as second spectral channels from said output multi-wavelength optical signal.

28. (New) The optical add-drop apparatus of claim 24, wherein the control unit controls said beam-deflecting elements to direct selected ones of said second spectral channels to said output port to be added to said output multi-wavelength optical signal.

29. (New) The optical add-drop apparatus of claim 23 further comprising alignment mirrors for adjusting alignment of said input and output multi-wavelength optical signals and said second spectral channels with said wavelength-selective device.

30. (New) The optical add-drop apparatus of claim 29 further comprising collimators associated with said alignment mirrors, and imaging lenses in a telecentric arrangement with said alignment mirrors and said collimators.

31. (New) The optical add-drop apparatus of claim 23, wherein said wavelength selective device further combines selected ones of said spectral channels reflected from said beam-deflecting elements to form said output multi-wavelength optical signal.

32. (New) The optical add-drop apparatus of claim 23, wherein said fiber collimator one or more other ports comprise a fiber collimator add port and a fiber collimator drop port for respectively adding second and dropping first spectral channels.

33. (New) The optical add-drop apparatus of claim 23 further comprising a beam-focuser for focusing said separated spectral channels onto said beam deflecting elements.

34. (New) The optical add-drop apparatus of claim 23, wherein said wavelength-selective device comprises a device selected from the group consisting of ruled diffraction gratings, holographic diffraction gratings, echelle gratings, curved diffraction gratings, and dispersing prisms.

35. (New) The optical add-drop apparatus of claim 23, wherein said beam-deflecting elements comprise micromachined mirrors.

36. (New) The optical add-drop apparatus of claim 23, wherein said beam-deflecting elements comprise reflective membranes.

37. (New) An optical add-drop apparatus, comprising:

a fiber collimator serving as an input port for an input multi-wavelength optical signal having multiple spectral channels;

an output port for an output multi-wavelength optical signal;

one or more fiber collimators serving as one or more drop ports for selected spectral channels dropped from said multi-wavelength optical signal;

a wavelength-selective device for spatially separating said multiple spectral channels; and

a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable in two dimensions to reflect its corresponding spectral channel to a selected one of said output port or the fiber collimators serving as said ports and to control the power of the spectral channel reflected to said output port of the fiber collimator serving as said selected port, whereby a subset of said spectral channels is directed to said fiber collimator serving as said drop ports.

38. (New) An optical add-drop apparatus, comprising:

a fiber collimator serving as an input port for an input multi-wavelength optical signal having multiple spectral channels;

an output port for an output multi-wavelength optical signal;

one or more fiber collimators serving as one or more add ports for selected spectral channels to be added to said output multi-wavelength optical signal;

a wavelength-selective device for reflecting said multiple and said selected spectral channels; and

a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable in two dimensions to reflect its corresponding spectral channel to a selected one of said output port or the fiber collimator serving as said ports and to control the power of the spectral channel reflected to said output port or said fiber collimator serving as said selected port, whereby said spectral channels from said fiber collimators serving as said add ports are selectively provided to said output port.

39. (New) A method of performing dynamic add and drop in a WDM optical network, comprising:

separating an input multi-wavelength optical signal into spectral channels;

imaging each of said spectral channels onto a corresponding beam-deflecting element;

controlling dynamically and continuously said beam-deflecting elements in two dimensions so as to combine selected ones of said spectral channels into an output multi-wavelength optical signal and to control the power of the spectral channels combined into said output multi-wavelength optical signal; and

receiving the output multi-wavelength optical signal at an output port that transmits the output multi-wavelength optical signal to an optical fiber.

40. (New) The method of claim 39, wherein said selected ones of said spectral channels comprises a subset of said spectral channels, such that other non-selected ones of said spectral channels are dropped from said output multi-wavelength optical signal.

41. (New) The method of claim 40, wherein said controlling comprises reflecting said non-selected ones of said spectral channels to one or more fiber collimator serving as drop ports.

42. (New) The method of claim 39 further comprising imaging other spectral channels onto other corresponding beam-deflecting elements, and controlling dynamically and continuously said other beam-deflecting elements so as to combine said other spectral channels with said selected ones of said spectral channels into said output multi-wavelength optical signal.

43. (New) The method of claim 39, wherein said imaging comprises focusing said spectral channels onto said beam-deflecting elements.

44. (New) The method of claim 39 further comprising monitoring a power level in one or more of said selected ones of said spectral channels, and controlling an alignment between said input multi-wavelength optical signal and corresponding beam-deflecting elements in response to said monitoring.

45. (New) The optical add-drop apparatus of claim 23:

wherein none of the multi-wavelength optical signal, the second spectral channels, or the output multi-wavelength optical signal are transmitted through a circulator.

46. (New) The optical add-drop apparatus of claim 23, wherein each of the fiber collimators is a GRIN lens.

47. (New) The optical add-drop apparatus of claim 23, wherein the fiber collimator input port, the one or more other fiber collimator ports, and the output port are arranged in a one dimensional array.

48. (New) The optical add-drop apparatus of claim 23, wherein the fiber collimator input port, the one or more other fiber collimator ports, and the output port are arranged in a two dimensional array.

49. (New) The optical add-drop apparatus of claim 23, wherein each of the beam-deflecting elements is configured to be capable of reflecting its corresponding spectral channel to each and every one of the fiber collimators ports.

50. (New) The optical add-drop apparatus of claim 37, wherein none of the input or output multi-wavelength optical signal or the spectral channels are transmitted through a circulator.

51. (New) The optical add-drop apparatus of claim 38, wherein none of the input or output multi-wavelength optical signal or the spectral channels are transmitted through a circulator.

52. (New) The optical add-drop apparatus of claim 23, wherein the output port is separate from the fiber collimator input port.

53. (New) The optical add-drop apparatus of claim 23, wherein the output port is three or more output ports that are separate from the fiber collimator input port.

54. (New) The optical add-drop apparatus of claim 23, further comprising a power-management system configured to manage power levels of at least one of the first spectral channels and the second spectral channels.

55. (New) The optical add-drop apparatus of claim 54, wherein the power-management system is further configured to control coupling efficiency of one of the first and second spectral channel to at least one port.

56. (Canceled)

57. (New) The optical add-drop apparatus of claim 23, wherein the beam-deflecting elements are micromirrors.

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 23-55 and 57 are pending in the application, with claims 23 and 37-39 being the independent claims. Claims 23, 28, 37-39, 47, 48, 52, and 53 are sought to be amended. Claim 56 is sought to be cancelled and claims 1-22 were previously canceled without prejudice to or disclaimer of the subject matter therein. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicant respectfully requests that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn. Throughout the arguments, Applicant reminds the Examiner that the claims are given their broadest reasonable meaning in view of the specification, and any paraphrasing of the claim features is not to be interpreted as reading any features into, or characterizing of, the claims.

Statement of Substance of Examiner Interview

The Examiners are thanked for their time during an Interview conducted on July 16, 2009 with Applicant's representatives Robert Greene Sterne (Reg. No. 28,912), Jason D. Eisenberg (Reg. No. 43,447), Sean Flood (Reg. No. 64,378), and Roozbeh Gorgin (Reg. No. 75,269). The Examiners provided guidance regarding all outstanding rejections and objections. Tentative agreement was reached that implementation of that guidance would result in allowance of the claims, barring an updated search. The Examiner helpful guidance is reflected in all the claim amendments and arguments presented herein. Finally, the Examiners are thanked for their indication they would continue to work with Applicants after the Reply is filed if anything further is needed for allowance.

Applicant generally agrees with the Interview Summary mailed July 19, 2019 unless noted below.

Statement of Support for Claim Amendments -- 37 C.F.R. § 1.173(c)

Claims 23, 28, 37-39, 47, 48, 52, and 53 are amended as shown in the Appendix to clarify the output port in some embodiments. Exemplary support for the claim amendments can be found in the claims of U.S. Reissue Patent RE42,368 (the "'368 patent"). Applicant respectfully submits that the claims as originally filed are part of the disclosure and applicant may incorporate the claimed subject matter without being charged with adding "new matter." *See In re Benno*, 768 F.2d 1340, 1346 (Fed. Cir. 1985).

Objections

Regarding claims 1-57, the Non-Final Office Action of June 26, 2019 (hereinafter the "Non-Final Office Action") beginning on page 4 states:

> " The markings of the MARCH 2019 CLAIM AMENDMENTS is objected to because matter omitted via the *Inter Partes* Review Certificate should be lined-through, matter omitted via the instant application should be triple-bracketed[1], and matter added via the instant application should be tripled underlined[2]....
>
> Claims 1-6, 9-13, and 15-22 of the R1 Patent should be lined-through because they are cancelled via *Inter Partes* Review Certificate issued Dec. 10, 2018 (see MPEP§ 1453(VI)(B)).
>
> Claims 7-8 and 14 of R1 may be cancelled merely by directing, in writing, the cancellation of the patent claim (see MPEP §1453(V)(B)).
>
> Alternatively, claims 7-8 and 14 of R1 may be cancelled by enclosing the entire claim in double bracketing (e.g., '[[this is deleted subject matter enclosed by double bracketing]]') because they are being cancelled via the instant application (R2), which is a reissue of a reissue (R1) (see MPEP §1453(VI)(A)).
>
> Claims 23-57, which were added via the MARCH 2019 CLAIM AMENDMENTS, should be double underlined because they are being added via

---

[1] Applicant believes the reference to "triple bracketed" is a mistake because this is the second reissue (R2) and any bracketing should be double bracketing. Examiner indicates this with respect to claims 23-57. Applicant will proceed with any deletions using the double bracket format.

[2] Applicant believes the reference to "triple underlined" is a mistake because this is the second reissue (R2) and any underlining should be double bracketing. Examiner indicates this with respect to claims 23-57. Applicant will proceed with any additions using the double underline format.

> the instant application (R2), which is a reissue of a reissue (R1) (see MPEP §1453(VI)(A)).” [underlining and italics in original].

Applicant respectfully submits that the claims have been formatted pursuant to Examiner’s suggestions. Applicant respectfully requests that the objections be withdrawn.

Double Patenting

Regarding claims 23-31, 33-55, and 57, the Non-Final Office Action beginning on page 13 states:

> “ Claims 23-31, 33-55, and 57 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claim 98, 99, 103, and 137 of copending Application No. 16/023,183 (reference application). Although the claims at issue are not identical, they are not patentably distinct from each other for the following reasons ….” [underlining in original].

While Applicant respectfully disagrees, to further prosecution Applicant submits a terminal disclaimer along with this Amendment disclaiming the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of co-pending Application No. 16/023,183 (which is a reissue application of previously issued U.S. Patent No. RE42,678, which is a reissue application of previously issued U.S. Patent No. RE39,397, which is a reissue of U.S Patent No. 6,625,346). Applicant respectfully submits the submission of the terminal disclaimer places claims 23-31, 33-55, and 57 in allowable condition and allowance is respectfully requested.

Claim Rejections – 35 USC § 251

Claims 23-57 are rejected under 35 U.S.C. § 251 as allegedly being based upon new matter added to the patent for which reissue is sought.

Regarding claims 23 and 37-39, the Non-Final Office Action beginning on page 6 states:

> " Claims 23-57 are rejected under 35 U.S.C. 251 as being based upon new matter added to the patent for which reissue is sought. The added material which is not supported by the prior patent is as follows.
>
> As to independent claim 23, the new matter is ***'[a]n optical add-drop apparatus comprising fiber collimators serving as an...output port...the fiber collimator output port for an output multi-wavelength optical signal....'***
>
> As to independent claims 37 and 38, the new matter is ***'[a]n optical add-drop apparatus, comprising...a fiber collimator output port serving as an output multiwavelength optical signal....'***
>
> As to independent claim 39, the new matter is ***'[a] method of perming dynamic add and drop in a WDM network comprising...receiving the output multiwavelength optical signal at a fiber collimator serving as an output port that transmits the output multi-wavelength optical signal to an optical fiber.'***
>
> Specifically, Examiners find support for fiber collimators serving as an output port of the wavelength-separating apparatus (WSR) but Examiners do not find support for fiber collimators serving as an output port of an optical add-drop apparatus (OADM)." [bold, underlining, and italics in original].

Applicant respectfully disagrees, but in order to advance prosecution, Applicant has amended the claims to remove the limitation of the fiber collimators serving as output ports. While Applicant has amended the claims in conformance with the agreement reached in the Examiner Interview, Applicant respectfully traverses the rejections because the claim limitation of fiber collimators serving as an output port for an output multi-wavelength optical signal is supported throughout the specification of RE42,368 (the "'368 patent"). While Applicant previously indicated in its Second Preliminary Amendment where support can be found for the above amendments in the '368 patent, Applicant respectfully points Examiner to another specific example, '368 patent col. 5, lines 1-17, which states:

> " Accordingly, the WSR-S (or WSR) apparatus of the present invention may be used to construct a variety of optical devices, including a novel class of dynamically reconfigurable optical add-drop multiplexers (OADMs), as exemplified in the following embodiments.
>
> One embodiment of an OADM of the present invention comprises an aforementioned WSR-S (or WSR) apparatus and an optical combiner. The output

> ports of the WSR-S apparatus include a pass-through port and one or more drop ports, each carrying any number of the spectral channels. The optical combiner is coupled to the pass-through port, serving to combine the pass-through channels with one or more add spectral channels. The combined optical signal constitutes an output signal of the system. The optical combiner may be an Nx1 ($N \leq 2$) broadband fiber-optic coupler, for instance, 15 which also serves the purpose of multiplexing a multiplicity of add spectral channels to be coupled into the system."

The above paragraph indicates that the OADMs can be created using the WSR apparatus. As indicated in the Non-Final Office Action beginning on page 6, *supra*, Examiner admits to finding support for fiber collimator output ports of the WSR apparatus. Thus, it follows that if OADMs can be created using the WSR apparatus, there is support for OADMs having fiber collimator output ports via the WSR apparatus having fiber collimators as output ports. Similar statements of support are found in '368 patent col. 5, lines 18-48, col. 12, lines 36-45, col. 13, lines 18-24, which indicate that the OADMs are created using the WSR apparatus that contains the fiber collimators.

Thus, Applicant respectfully submits that the claimed limitations above do not add any new matter because support can be found for the above amendment in the specification of the '368 patent and because according to MPEP § 1411.02:

> "The claims in the reissue application must be for subject matter which the applicant had the right to claim in the original patent."

Regarding claims 24-36 and 40-57, these dependent claims depend on independent claims 23 and 37-39, and are believed to be allowable since they include all the limitations set forth in the independent claims from which they depend and claim additional combinations thereof.

Further regarding claim 56, the Non-Final Office Action beginning on page 12 states:

> " In addition, dependent claim 56 contains new matter because of the negative limitation '*without an intermediate mirror,*' which does not have basis in the original disclosure (see MPEP §2173.05(i))." [underlining and italics in original].

Applicant has canceled the claim. As a result, the rejection is moot.

Withdrawal of the rejection is respectfully requested.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicant believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

/Jason D. Eisenberg/

Jason D. Eisenberg
Attorney for Applicant
Registration No. 43,447

Date: July 29, 2019

1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
(202) 371-2600

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CLAIMS APPENDIX – MPEP 1453(V)(D) – Annotated New Claims

As reissue rules do not allow for showing changes with respect to the last amendment file, but rather only changes with respect to the patent being reissued, Applicant provides the following informally annotated claims showing changes between the Second Preliminary Amendment and this Amendment.

23. (New, amended) An optical add-drop apparatus comprising an output port and fiber collimators serving as an input port and[[,]] one or more other ports[[, and an output port]], the apparatus comprising:

the fiber collimator input port for an input multi-wavelength optical signal having first spectral channels;

the fiber collimator one or more other ports for second spectral channels;

the [[fiber collimator]] output port for an output multi-wavelength optical signal;

a wavelength-selective device for spatially separating said spectral channels;

a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable in two dimensions to reflect its corresponding spectral channel to a selected one of said output port or the fiber collimator ports and to control the power of the spectral channel reflected to said output port or the fiber collimator selected port.

24. (New) The optical add-drop apparatus of claim 23 further comprising a control unit for controlling each of said beam-deflecting elements.

25. (New) The optical add-drop apparatus of claim 24, wherein the control unit further comprises a servo-control assembly, including a spectral monitor for monitoring power levels of selected ones of said spectral channels, and a processing unit responsive to said power levels for controlling said beam-deflecting elements.

26. (New) The optical add-drop apparatus of claim 25, wherein said servo-control assembly maintains said power levels at predetermined values.

27. (New) The optical add-drop apparatus of claim 24, wherein the control unit controls said beam-deflecting elements to direct selected ones of said first spectral channels to one or more of said fiber collimator other ports to be dropped as second spectral channels from said output multi-wavelength optical signal.

28. (New, amended) The optical add-drop apparatus of claim 24, wherein the control unit controls said beam-deflecting elements to direct selected ones of said second spectral channels to said [[fiber collimator]] output port to be added to said output multi-wavelength optical signal.

29. (New) The optical add-drop apparatus of claim 23 further comprising alignment mirrors for adjusting alignment of said input and output multi-wavelength optical signals and said second spectral channels with said wavelength-selective device.

30. (New) The optical add-drop apparatus of claim 29 further comprising collimators associated with said alignment mirrors, and imaging lenses in a telecentric arrangement with said alignment mirrors and said collimators.

31. (New) The optical add-drop apparatus of claim 23, wherein said wavelength selective device further combines selected ones of said spectral channels reflected from said beam-deflecting elements to form said output multi-wavelength optical signal.

32. (New) The optical add-drop apparatus of claim 23, wherein said fiber collimator one or more other ports comprise a fiber collimator add port and a fiber collimator drop port for respectively adding second and dropping first spectral channels.

33. (New) The optical add-drop apparatus of claim 23 further comprising a beam-focuser for focusing said separated spectral channels onto said beam deflecting elements.

34. (New) The optical add-drop apparatus of claim 23, wherein said wavelength-selective device comprises a device selected from the group consisting of ruled diffraction gratings, holographic diffraction gratings, echelle gratings, curved diffraction gratings, and dispersing prisms.

35. (New) The optical add-drop apparatus of claim 23, wherein said beam-deflecting elements comprise micromachined mirrors.

36. (New) The optical add-drop apparatus of claim 23, wherein said beam-deflecting elements comprise reflective membranes.

37. (New, amended) An optical add-drop apparatus, comprising:

a fiber collimator serving as an input port for an input multi-wavelength optical signal having multiple spectral channels;

[[a fiber collimator serving as]] an output port for an output multi-wavelength optical signal;

one or more fiber collimators serving as one or more drop ports for selected spectral channels dropped from said multi-wavelength optical signal;

a wavelength-selective device for spatially separating said multiple spectral channels; and

a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable in two dimensions to reflect its corresponding spectral channel to a selected one of said output port or the fiber collimators serving as said ports and to control the power of the spectral channel reflected to said output port of the fiber collimator serving as said selected port, whereby a subset of said spectral channels is directed to said fiber collimator serving as said drop ports.

38. (New, amended) An optical add-drop apparatus, comprising:

a fiber collimator serving as an input port for an input multi-wavelength optical signal having multiple spectral channels;

[[a fiber collimator serving as]] an output port for an output multi-wavelength optical signal;

one or more fiber collimators serving as one or more add ports for selected spectral channels to be added to said output multi-wavelength optical signal;

a wavelength-selective device for reflecting said multiple and said selected spectral channels; and

a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable in two dimensions to reflect its corresponding spectral channel to a selected one of said output port or the fiber collimator serving as said ports and to control the power of the spectral channel reflected to said output port or said fiber collimator serving as said selected port, whereby said spectral channels from said fiber collimators serving as said add ports are selectively provided to said [[fiber collimator serving as]] output port.

39. (New, amended) A method of performing dynamic add and drop in a WDM optical network, comprising:

separating an input multi-wavelength optical signal into spectral channels;

imaging each of said spectral channels onto a corresponding beam-deflecting element;

controlling dynamically and continuously said beam-deflecting elements in two dimensions so as to combine selected ones of said spectral channels into an output multi-wavelength optical signal and to control the power of the spectral channels combined into said output multi-wavelength optical signal; and

receiving the output multi-wavelength optical signal at [[a fiber collimator serving as]] an output port that transmits the output multi-wavelength optical signal to an optical fiber.

40. (New) The method of claim 39, wherein said selected ones of said spectral channels comprises a subset of said spectral channels, such that other non-selected ones of said spectral channels are dropped from said output multi-wavelength optical signal.

41. (New) The method of claim 40, wherein said controlling comprises reflecting said non-selected ones of said spectral channels to one or more fiber collimator serving as drop ports.

42. (New) The method of claim 39 further comprising imaging other spectral channels onto other corresponding beam-deflecting elements, and controlling dynamically and continuously said other beam-deflecting elements so as to combine said other spectral channels with said selected ones of said spectral channels into said output multi-wavelength optical signal.

43. (New) The method of claim 39, wherein said imaging comprises focusing said spectral channels onto said beam-deflecting elements.

44. (New) The method of claim 39 further comprising monitoring a power level in one or more of said selected ones of said spectral channels, and controlling an alignment between said input multi-wavelength optical signal and corresponding beam-deflecting elements in response to said monitoring.

45. (New) The optical add-drop apparatus of claim 23:

wherein none of the multi-wavelength optical signal, the second spectral channels, or the output multi-wavelength optical signal are transmitted through a circulator.

46. (New) The optical add-drop apparatus of claim 23, wherein each of the fiber collimators is a GRIN lens.

47. (New, amended) The optical add-drop apparatus of claim 23, wherein the fiber collimator input port, the one or more other fiber collimator ports, and the [[fiber collimator]] output port are arranged in a one dimensional array.

48. (New, amended) The optical add-drop apparatus of claim 23, wherein the fiber collimator input port, the one or more other fiber collimator ports, and the [[fiber collimator]] output port are arranged in a two dimensional array.

49. (New) The optical add-drop apparatus of claim 23, wherein each of the beam-deflecting elements is configured to be capable of reflecting its corresponding spectral channel to each and every one of the fiber collimators ports.

50. (New) The optical add-drop apparatus of claim 37, wherein none of the input or output multi-wavelength optical signal or the spectral channels are transmitted through a circulator.

51. (New) The optical add-drop apparatus of claim 38, wherein none of the input or output multi-wavelength optical signal or the spectral channels are transmitted through a circulator.

52. (New, amended) The optical add-drop apparatus of claim 23, wherein the [[fiber collimator]] output port is separate from the fiber collimator input port,

53. (New, amended) The optical add-drop apparatus of claim 23, wherein the [[fiber collimator]] output port is three or more [[fiber collimator]] output ports that are separate from the fiber collimator input port.

54. (New) The optical add-drop apparatus of claim 23, further comprising a power-management system configured to manage power levels of at least one of the first spectral channels and the second spectral channels.

55. (New) The optical add-drop apparatus of claim 54, wherein the power-management system is further configured to control coupling efficiency of one of the first and second spectral channel to at least one port.

56. (Canceled)

57. (New) The optical add-drop apparatus of claim 23, wherein the beam-deflecting elements are micromirrors.

Amendment Under 37 C.F.R. § 1.116
Expedited Procedure – Art Unit 3992

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors: CHEN *et al.*	Confirmation No.: 4945
Applicant: Capella Photonics, Inc.	Art Unit: 3992
Reissue Application No.: 16/023,127	Examiner: HUGHES, DEANDRA M.
Filing Date: June 29, 2018	Atty. Docket: 3564.014REI0

Title: **Reconfigurable Optical Add-Drop Multiplexers with Servo Control and Dynamic Spectral Power Management Capabilities**

Amendment and Reply Under 37 C.F.R. § 1.116

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Mail Stop AF

Commissioner:

In reply to the Office Action dated September 5, 2019, Applicant submits the following Amendment and Remarks.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks and Arguments begin on page 11 of this paper.

It is not believed that extensions of time are required beyond those that may otherwise be provided for in documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and any additional fees required to continue prosecution or appeal of this application (including issue fee, fees for net addition of claims or forwarding to appeal) are hereby authorized to be charged to our Deposit Account No. 19-0036.

Amendments to the Claims

Please amend pending **claim 39** by incorporating the allowing subject matter of claim 41 (and claim 40) into claim 39. Please cancel pending **claims 40 and 41**. **Claims 1-22** remain canceled. A complete listing of all claims and their status in the application is as follows:

~~1. An optical add-drop apparatus comprising~~

~~an input port for an input multi-wavelength optical signal having first spectral channels;~~

~~one or more other ports for second spectral channels;~~

~~an output port for an output multi-wavelength optical signal;~~

~~a wavelength-selective device for spatially separating said spectral channels; and~~

~~a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable *in two dimensions* to reflect its corresponding spectral channel to a selected one of said ports *and to control the power of the spectral channel reflected to said selected port*.~~

~~2. The optical add-drop apparatus of claim 1 further comprising a control unit for controlling each of said beam-deflecting elements.~~

~~3. The optical add-drop apparatus of claim 2, wherein the control unit further comprises a servo-control assembly, including a spectral monitor for monitoring power levels of selected ones of said spectral channels, and a processing unit responsive to said power levels for controlling said beam-deflecting elements.~~

~~4. The optical add-drop apparatus of claim 3, wherein said servo-control assembly maintains said power levels at predetermined values.~~

~~5. The optical add-drop apparatus of claim 2, wherein the control unit controls said beam-deflecting elements to direct selected ones of said first spectral channels to one or more of said other ports to be dropped as second spectral channels from said output multi-wavelength optical signal.~~

~~6. The optical add-drop apparatus of claim 2, wherein the control unit controls said beam-deflecting elements to direct selected ones of said second spectral channels to said output port to be added to said output multi-wavelength optical signal.~~

7. (Canceled)

8. (Canceled)

~~9. The optical add-drop apparatus of claim 1, wherein said wavelength selective device further combines selected ones of said spectral channels reflected from said beam-deflecting elements to form said output multi-wavelength optical signal.~~

~~10. The optical add-drop apparatus of claim 1, wherein said one or more other ports comprise an add port and a drop port for respectively adding second and dropping first spectral channels.~~

~~11. The optical add-drop apparatus of claim 1 further comprising a beam-focuser for focusing said separated spectral channels onto said beam-deflecting elements.~~

~~12. The optical add-drop apparatus of claim 1, wherein said wavelength-selective device comprises a device selected from the group consisting of ruled diffraction gratings, holographic diffraction gratings, echelle gratings, curved diffraction gratings, and dispersing prisms.~~

~~13. The optical add-drop apparatus of claim 1, wherein said beam-deflecting elements comprise micromachined mirrors.~~

14. (Canceled)

~~15. An optical add-drop apparatus, comprising~~

~~an input port for an input multi-wavelength optical signal having multiple spectral channels;~~

~~an output port for an output multi-wavelength optical signal;~~

~~one or more drop ports for selected spectral channels dropped from said multi-wavelength optical signal;~~

~~a wavelength-selective device for spatially separating said multiple spectral channels; and~~

~~a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable *in two dimensions* to reflect its corresponding spectral channel to a selected one of said ports *and to control the power of the spectral channel reflected to said selected port*, whereby a subset of said spectral channels is directed to said drop ports.~~

~~16. An optical add-drop apparatus, comprising:~~

~~an input port for an input multi-wavelength optical signal having multiple spectral channels;~~

~~an output port for an output multi-wavelength optical signal;~~

~~one or more add ports for selected spectral channels to be added to said output multi-wavelength optical signal;~~

~~a wavelength-selective device for reflecting said multiple and said selected spectral channels; and~~

~~a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable *in two dimensions* to reflect its corresponding spectral channel to a selected one of said ports *and to control the power of the spectral channel reflected to said selected port*, whereby said spectral channels from said add ports are selectively provided to said output port.~~

~~17. A method of performing dynamic add and drop in a WDM optical network, comprising:~~

~~separating an input multi-wavelength optical signal into spectral channels;~~

~~imaging each of said spectral channels onto a corresponding beam-deflecting element; and~~

~~controlling dynamically and continuously said beam-deflecting elements *in two dimensions* so as to combine selected ones of said spectral channels into an output multi-wavelength optical signal *and to control the power of the spectral channels combined into said output multi-wavelength optical signal.*~~

~~18. The method of claim 17, wherein said selected ones of said spectral channels comprises a subset of said spectral channels, such that other non-selected ones of said spectral channels are dropped from said output multi-wavelength optical signal.~~

~~19. The method of claim 18, wherein said controlling comprises reflecting said non-selected ones of said spectral channels to one or more drop ports.~~

~~20. The method of claim 17 further comprising imaging other spectral channels onto other corresponding beam-deflecting elements, and controlling dynamically and continuously said other beam-deflecting elements so as to combine said other spectral channels with said selected ones of said spectral channels into said output multi-wavelength optical signal.~~

~~21. The method of claim 17, wherein said imaging comprises focusing said spectral channels onto said beam-deflecting elements.~~

~~22. The method of claim 17 further comprising monitoring a power level in one or more of said selected ones of said spectral channels, and controlling an alignment between said input multi-wavelength optical signal and corresponding beam-deflecting elements in response to said monitoring.~~

23. (New) An optical add-drop apparatus comprising an output port and fiber collimators serving as an input port and one or more other ports, the apparatus comprising:

the fiber collimator input port for an input multi-wavelength optical signal having first spectral channels;

the fiber collimator one or more other ports for second spectral channels;

the output port for an output multi-wavelength optical signal;

a wavelength-selective device for spatially separating said spectral channels;

a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable in two dimensions to reflect its corresponding spectral channel to

a selected one of said output port or the fiber collimator ports and to control the power of the spectral channel reflected to said output port or the fiber collimator selected port.

24. (New) The optical add-drop apparatus of claim 23 further comprising a control unit for controlling each of said beam-deflecting elements.

25. (New) The optical add-drop apparatus of claim 24, wherein the control unit further comprises a servo-control assembly, including a spectral monitor for monitoring power levels of selected ones of said spectral channels, and a processing unit responsive to said power levels for controlling said beam-deflecting elements.

26. (New) The optical add-drop apparatus of claim 25, wherein said servo-control assembly maintains said power levels at predetermined values.

27. (New) The optical add-drop apparatus of claim 24, wherein the control unit controls said beam-deflecting elements to direct selected ones of said first spectral channels to one or more of said fiber collimator other ports to be dropped as second spectral channels from said output multi-wavelength optical signal.

28. (New) The optical add-drop apparatus of claim 24, wherein the control unit controls said beam-deflecting elements to direct selected ones of said second spectral channels to said output port to be added to said output multi-wavelength optical signal.

29. (New) The optical add-drop apparatus of claim 23 further comprising alignment mirrors for adjusting alignment of said input and output multi-wavelength optical signals and said second spectral channels with said wavelength-selective device.

30. (New) The optical add-drop apparatus of claim 29 further comprising collimators associated with said alignment mirrors, and imaging lenses in a telecentric arrangement with said alignment mirrors and said collimators.

31. (New) The optical add-drop apparatus of claim 23, wherein said wavelength selective device further combines selected ones of said spectral channels reflected from said beam-deflecting elements to form said output multi-wavelength optical signal.

32. (New) The optical add-drop apparatus of claim 23, wherein said fiber collimator one or more other ports comprise a fiber collimator add port and a fiber collimator drop port for respectively adding second and dropping first spectral channels.

33. (New) The optical add-drop apparatus of claim 23 further comprising a beam-focuser for focusing said separated spectral channels onto said beam deflecting elements.

34. (New) The optical add-drop apparatus of claim 23, wherein said wavelength-selective device comprises a device selected from the group consisting of ruled diffraction gratings, holographic diffraction gratings, echelle gratings, curved diffraction gratings, and dispersing prisms.

35. (New) The optical add-drop apparatus of claim 23, wherein said beam-deflecting elements comprise micromachined mirrors.

36. (New) The optical add-drop apparatus of claim 23, wherein said beam-deflecting elements comprise reflective membranes.

37. (New) An optical add-drop apparatus, comprising:

a fiber collimator serving as an input port for an input multi-wavelength optical signal having multiple spectral channels;

an output port for an output multi-wavelength optical signal;

one or more fiber collimators serving as one or more drop ports for selected spectral channels dropped from said multi-wavelength optical signal;

a wavelength-selective device for spatially separating said multiple spectral channels; and

a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable in two dimensions to reflect its corresponding spectral channel to a selected one of said output port or the fiber collimators serving as said ports and to control the power of the spectral channel reflected to said output port of the fiber collimator serving as said selected port, whereby a subset of said spectral channels is directed to said fiber collimator serving as said drop ports.

38. (New) An optical add-drop apparatus, comprising:

a fiber collimator serving as an input port for an input multi-wavelength optical signal having multiple spectral channels;

an output port for an output multi-wavelength optical signal;

one or more fiber collimators serving as one or more add ports for selected spectral channels to be added to said output multi-wavelength optical signal;

a wavelength-selective device for reflecting said multiple and said selected spectral channels; and

a spatial array of beam-deflecting elements positioned such that each element receives a corresponding one of said spectral channels, each of said elements being individually and continuously controllable in two dimensions to reflect its corresponding spectral channel to a selected one of said output port or the fiber collimator serving as said ports and to control the power of the spectral channel reflected to said output port or said fiber collimator serving as said selected port, whereby said spectral channels from said fiber collimators serving as said add ports are selectively provided to said output port.

39. (New, amended) A method of performing dynamic add and drop in a WDM optical network, comprising:

separating an input multi-wavelength optical signal into spectral channels;

imaging each of said spectral channels onto a corresponding beam-deflecting element;

controlling dynamically and continuously said beam-deflecting elements in two dimensions so as to combine selected ones of said spectral channels into an output multi-wavelength optical signal and to control the power of the spectral channels combined into said output multi-wavelength optical signal;

receiving the output multi-wavelength optical signal at an output port that transmits the output multi-wavelength optical signal to an optical fiber; and

wherein

said selected ones of said spectral channels comprises a subset of said spectral channels, such that other non-selected ones of said spectral channels are dropped from said output multi-wavelength optical signal; and

said controlling comprises reflecting said non-selected ones of said spectral channels to one or more fiber collimator serving as drop ports.

40. (Canceled)

41. (Canceled)

42. (New) The method of claim 39 further comprising imaging other spectral channels onto other corresponding beam-deflecting elements, and controlling dynamically and continuously said other beam-deflecting elements so as to combine said other spectral channels with said selected ones of said spectral channels into said output multi-wavelength optical signal.

43. (New) The method of claim 39, wherein said imaging comprises focusing said spectral channels onto said beam-deflecting elements.

44. (New) The method of claim 39 further comprising monitoring a power level in one or more of said selected ones of said spectral channels, and controlling an alignment between said input multi-wavelength optical signal and corresponding beam-deflecting elements in response to said monitoring.

45. (New) The optical add-drop apparatus of claim 23:

wherein none of the multi-wavelength optical signal, the second spectral channels, or the output multi-wavelength optical signal are transmitted through a circulator.

46. (New) The optical add-drop apparatus of claim 23, wherein each of the fiber collimators is a GRIN lens.

47. (New) The optical add-drop apparatus of claim 23, wherein the fiber collimator input port, the one or more other fiber collimator ports, and the output port are arranged in a one dimensional array.

48. (New) The optical add-drop apparatus of claim 23, wherein the fiber collimator input port, the one or more other fiber collimator ports, and the output port are arranged in a two dimensional array.

49. (New) The optical add-drop apparatus of claim 23, wherein each of the beam-deflecting elements is configured to be capable of reflecting its corresponding spectral channel to each and every one of the fiber collimators ports.

50. (New) The optical add-drop apparatus of claim 37, wherein none of the input or output multi-wavelength optical signal or the spectral channels are transmitted through a circulator.

51. (New) The optical add-drop apparatus of claim 38, wherein none of the input or output multi-wavelength optical signal or the spectral channels are transmitted through a circulator.

52. (New) The optical add-drop apparatus of claim 23, wherein the output port is separate from the fiber collimator input port.

53. (New) The optical add-drop apparatus of claim 23, wherein the output port is three or more output ports that are separate from the fiber collimator input port.

54. (New) The optical add-drop apparatus of claim 23, further comprising a power-management system configured to manage power levels of at least one of the first spectral channels and the second spectral channels.

55. (New) The optical add-drop apparatus of claim 54, wherein the power-management system is further configured to control coupling efficiency of one of the first and second spectral channel to at least one port.

56. (Canceled)

57. (New) The optical add-drop apparatus of claim 23, wherein the beam-deflecting elements are micromirrors.

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 23-39, 42-55 and 57 are pending in the application, with claims 23 and 37-39 being the independent claims. Claim 39 is sought to be amended. Claims 40 and 41 are sought to be canceled without prejudice to or disclaimer of the subject matter therein. Claims 1-22 were previously canceled without prejudice to or disclaimer of the subject matter therein. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Applicant respectfully requests these amendments be entered after final rejection as they merely fix the declaration error statement and they incorporate allowable subject matter from claims 40 and 41 into the claim they depended or ultimately depended from, claim 39, as suggested by the Examiner.

Based on the above amendment and the following remarks, Applicant respectfully requests that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn. Throughout the arguments, Applicant reminds the Examiner that the claims are given their broadest reasonable meaning in view of the specification, and any paraphrasing of the claim features is not to be interpreted as reading any features into, or characterizing of, the claims.

Statement of Substance of Examiner Interview

The Examiners are thanked for their time during an Interview conducted on September 11, 2019 with Applicant's representatives Jason D. Eisenberg (Reg. No. 43,447), Sean Flood (Reg. No. 64,378), Roozbeh Gorgin (Reg. No. 75,269), and Tyler Dutton (Reg. No. 75,069). The Examiners provided guidance regarding all outstanding objections and rejections. Tentative agreement was reached that implementation of that guidance would result in allowance of the claims, barring an updated search. The Examiners helpful guidance is reflected in all the claim amendments and arguments presented herein. Finally, the Examiners are thanked for their indication they would continue to work with Applicants after this Amendment and Response is filed if anything further is needed for allowance.

Applicant generally agrees with the Interview Summary mailed September 17, 2019 unless noted below. And notes the Interview Summary mailed October 16, 2019.

Statement of Support for Claim Amendments -- 37 C.F.R. § 1.173(c)

Claim 39 is amended to incorporate the claim elements of previously pending claims 40 and 41. Exemplary support for the claim amendments can be found in the claims 18 and 19 of U.S. Reissue Patent RE42,368 (the "'368 patent") and in the previously filed pending claims 40 and 41 of this application. Applicant respectfully submits that the claims as originally filed are part of the disclosure and applicant may incorporate the claimed subject matter without being charged with adding "new matter." *See In re Benno*, 768 F.2d 1340, 1346 (Fed. Cir. 1985).

Defective Reissue Declaration

Regarding claims 23-55 and 57[1], the Final Office Action of September 5, 2019 (hereinafter the "Final Office Action") beginning on page 5 states:

> " Claims 23-55 and 57 are rejected as being based upon a defective reissue declaration under 35 U.S.C. 251 as set forth above. See 37 CFR 1.175.
>
> The reissue oath/declaration filed with this application is defective (see 37 CFR 1.175 and MPEP § 1414) because the description of the error is insufficient to support the errors corrected via the JULY 2019 CLAIM AMENDMENTS.
>
> Specifically, the error described in the Reissue Declaration filed June 29, 2018 describes the error with respect to claim 16, which has been cancelled. Thus, the description of the error no longer supports this reissue application. However, Applicant may identify the reissuable error **in the remarks** because a proper reissuable error has been previously entered into the application (see 37 CFR 1.175(f)(2) and MPEP § 1451 (II)).
>
> It is sufficient that **the remarks** identify a single word, phrase, or expression in the specification or in an original claim, and how it renders the original patent wholly or partly inoperative or invalid (see MPEP §1414(II)). Thus, Examiners suggest providing the following statement **in the remarks** in response to this office action under 37 CFR 1.175(f)(2), which Examiners find would obviate this. This statement is merely a suggestion.

[1] Since claims 40 and 41 have been cancelled these remarks only related to the pending claims.

> 'This application narrows patent claim 1 by claiming the 'input port' is a 'fiber collimator input port' and that the one or more 'other ports' are 'fiber collimator ports' because merely claiming 'input port' and/or 'other ports' without limiting them to 'fiber collimator ports' was unduly broad." [underlining and bold in original].

Applicant appreciates Examiner's suggested language. Applicant respectfully submits the following statement that both identifies the reissuable error that is the basis of this reissue application and meets all requirements of specificity found in MPEP § 1414(II)(A-C). For example, the statement points out both (1) a specific claim: claim 50, and (2) specific language: "none of …are transmitted through a circulator":

> "The patent claims recite transmission of a multi-wavelength optical signal and/or said spectral channels, whereas at least new dependent claim 50 also requires 'none of the input or output multi-wavelength optical signal or the spectral channels are transmitted through a circulator.'"

Withdrawal of the rejection is respectfully requested.

Claim Rejections – 35 USC § 103

Claims 39-40 and 42-44 are rejected under 35 U.S.C. § 103 as being allegedly unpatentable over Bouevitch et al. (US Pat. No. 6,498,872 (hereinafter "Bouevitch")) in view of Smith et al. (US Pat. No. 6,798,941 (hereinafter "Smith")) in view of Lin et al. (US Pat. No. 5,661,591 (hereinafter "Lin")) in view of Ford et al. (NPL Wavelength Add-Drop Switching Using Tilting Micromirrors, Journal of Lightwave Technology, Vo. 17, No. 5, May 1999 (hereinafter "Lin")). Claim 40 has been cancelled, rendering its rejection moot. Applicant respectfully traverses with respect to the pending claims.

Without acquiescing to the propriety of the rejection, e.g., that Ford teaches "to an optical fiber" as Ford teaches at best *to a circulator*, **claim 39** has been clarified to include the allowable subject matter of claims 40 and 41:

> "… <u>said selected ones of said spectral channels comprises a subset of said spectral channels, such that other non-selected ones of said spectral channels are dropped from said output multi-wavelength optical signal; and</u>

said controlling comprises reflecting said non-selected ones of said spectral channels to one or more fiber collimator serving as drop ports."

The support for the above amendment is found in claims 18 and 19 of the '368 patent and in the previously filed claims 40 and 41 of this application, *supra*. Applicant respectfully submits that the claims as filed in the original specification are part of the disclosure and therefore, the applicant may amend the specification to include the claimed subject matter without being charged with adding "new matter." *See In re Benno*, 768 F.2d 1340, 1346 (Fed. Cir. 1985).

No new matter has been added.

Applicant respectfully submits the Final Office Action beginning on page 8 states that claim 41 is allowable, by stating:

> " As to claim 41, the prior art does not disclose or make obvious '***[a] method of performing dynamic add and drop into a WDM optical network…wherein said controlling comprises reflecting said non-selected ones of said spectral channels to one or more fiber collimator serving as drop ports***' in combination with the other limitations of the claims." [bold, italics, and underlining in original].

Because claim 41 depends on claim 40, and the subject matter of both claims have been incorporated into claim 39, claim 39 is now be allowable. Thus, the rejection is overcome.

Regarding claim 42-44, these dependent claims depend on claim 39, and are believed to be allowable since they include all the features set forth in the independent claim from which they depend and claim additional non-obvious combinations thereof and because:

> "[D]ependent claims are nonobvious if the independent claims from which they depend are nonobvious." *See In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992).

Withdrawal of the rejections is respectfully requested.

Allowable Subject Matter

Regarding claims 23-38, 41, 45-55, and 57, the Final Office Action beginning on page 8 states:

> " If a sufficient description of the error to support this reissue application is providing in the remarks in response to this office action, then the following claims would be in condition for allowance because the 35 USC §251 rejection for a defective declaration would be obviated."

Applicant appreciates Examiner indicating claims 23-38, 41, 45-55, and 57 are allowable pending a sufficient description of the error to support the reissue application. Applicant respectfully submits that the statement has been made above, *supra*. As a result, claims 23-38, 45-55, and 57 are in allowable condition and allowance is respectfully requested. Claim 41 has been canceled.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicant believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

/Jason D. Eisenberg/

Jason D. Eisenberg
Attorney for Applicant
Registration No. 43,447

Date: October 23, 2019

1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
(202) 371-2600